Appl. No. 10/575,572
Response to Final Action of October 5, 2007

PATENT
Docket No.: DE030355US1
Customer No. 000024737

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A device for providing an <u>artificially generated</u> angiographic image (A) of a body structure (1) matching a given heartbeat phase (H_d) and a respiratory phase (R_d), comprising a database (2) with <u>existing</u> angiograms (3, 3a) of the body structure (1) from different heartbeat phases (H) and respiratory phases (R), and a data processing apparatus linked thereto, which is arranged to carry out the following steps:

a) Calculation of a <u>transform</u> function (f), which describes a <u>geometrical</u> change (x) in the body structure (1) <u>occurring in the existing angiograms</u> dependent upon the respiratory phase (R), which calculation <u>of the transform function</u> takes place based on ~~from~~ the angiograms (3, 3a) <u>available</u> in the database (2); <u>and</u>

b) Generation of the <u>artificial</u> angiographic image (A) ~~to be produced~~ from at least one angiogram (3a) of the database (2), whose heartbeat phase (H_1) matches the given heartbeat phase (H_d) <u>and whose respiratory phase (R) does not match the given respiratory phase (R_d),</u> with the ~~aid~~ <u>use</u> of the calculated <u>transform</u> function (f)<u>, wherein the calculated transform function operates to transform the at least one angiogram into a corresponding at least one artificial angiographic image (A) that goes with both the given heartbeat phase (H_d) and the respiratory phase (R_d)</u>, wherein a representation of a current image of the body structure (1) <u>at the given heartbeat phase (H_d) and respiratory phase (R_d)</u> is superimposed ~~on~~ <u>with</u> the ~~provided~~ <u>corresponding artificially generated</u> angiographic image (A).

2. (Previously Presented) A device as claimed in claim 1, characterized in that the database (2) contains approximately between 10 and 100 angiograms (3).

3. (Currently Amended) A device as claimed in claim 1, characterized in that the transform function (f) describes the geometrical change that comprises a change in the position of the body structure (1).

4. (Original) A device as claimed in claim 1, characterized in that the data processing apparatus is arranged to determine a change in the position of the body structure (1) by a cross-correlation and/or maximization of the mutual information in relation to a reference angiogram.

5. (Currently Amended) A device as claimed in claim 1, characterized in that the data processing apparatus is arranged to leave static image objects discarded in the calculation of the transform function (f).

6. (Currently Amended) A device as claimed in claim 1, characterized in that it includes a display device for superimposed representation of [[a]] the current image of the body structure (1) and the provided corresponding artificially generated angiographic image (A).

7. (Original) A device as claimed in claim 1, characterized in that it includes an image-forming apparatus, in particular an X-ray apparatus and/or an MRI device.

8. (Original) A device as claimed in claim 1, characterized in that it includes an electrocardiographic device for determining an electrocardiogram.

9. (Original) A device as claimed in claim 1, characterized in that it includes a respiratory phase sensor.

10. (Currently Amended) A method for providing an <u>artificially generated</u> angiographic image (A) of a body structure (1) matching a given heartbeat phase (H_d) and a respiratory phase (R_d), based on a database (2) with <u>existing</u> angiograms (3, 3a) of the body structure (1) from different heartbeat phases (H) and respiratory phases (R), including the following steps:

a)   Calculation of a <u>transform</u> function (f) which describes a <u>geometrical</u> change in the body structure (1) <u>occurring in the existing angiograms</u> dependent upon the respiratory phase (R), which calculation <u>of the transform function</u> takes place based on the angiograms (3, 3a) <u>available</u> in the database (2); <u>and</u>

b)   Generation of the <u>artificial</u> angiographic image (A) ~~to be provided~~ from at least one angiogram (3a) of the database (2), whose heartbeat phase (H_1) matches the given heartbeat phase (H_d<u>) and whose respiratory phase (R) does not match the given respiratory phase (R_d)</u>, with the ~~aid~~ <u>use</u> of the calculated <u>transform</u> function (f)<u>, wherein the calculated transform function operates to transform the at least one angiogram into a corresponding at least one artificial angiographic image (A) that goes with both the given heartbeat phase (H_d) and the respiratory phase (R_d)</u>, wherein a representation of a current image of the body structure (1) <u>at the given heartbeat phase (H_d) and respiratory phase (R_d)</u> is superimposed ~~on~~ <u>with</u> the ~~provided~~ <u>corresponding artificially generated</u> angiographic image (A).

11. (Previously Presented) A device as claimed in claim 1, characterized in that the database (2) contains approximately between 30 and 50 angiograms (3).